

PROPOSED DRAFT FOR

A SYLLABUS OF  
TYPOGRAPHIC TAXONOMY

*Being a preliminary outline of all facets  
appertaining to the Art and Craft of the  
Founding of Metal Types as practiced  
until the time of the recent technological  
Revolution in the Graphic Arts Field*



*Submitted for consideration at the Second National  
Conference on Hot-Metal Typecasting and Design  
at Larchmont, New York, June 29 to July 2, 1980*  
THE PRIVATE PRESS & TYPEFOUNDRY OF  
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ANY OF those who have recently entered the field of metal typefounding have discovered that much of the technical information once so widespread has now disappeared; that individuals have now died and taken to their graves lifetimes of experiences never written down; and that the few publications dealing with the subject are either lost or are locked away in archives, making any access to them very difficult. For the thirty or more years during which I have been interested in this subject, I have been assembling what materials I could find, filling gaps here and there, but never finding all the information about typefounding in one place (Legros & Grant's *Typographical Printing Surfaces* notwithstanding). I have, accordingly, come to the view that there might be a place for an overview of the whole art, craft and science of typefounding, even if—at the outset—only in an outline form. That the outline given here is grossly imperfect and incomplete is self-evident, and that it contains many personal—perhaps cryptic—references to bits and pieces of technica is equally obvious. If it has any value, however, this start toward a syllabus will provide a point of departure for the eventual development of a more complete and useful document, the scope of which would cover the whole field of typefounding theory and practice, including an extensive bibliography. Any suggestions for improvement of the present work will be most gratefully received by the author.



# A Syllabus of Typographic Taxonomy

## I. The Anatomy of Type

- A. Anatomic nomenclature
- B. Structural morphology (special, wing, angled bodies; mortised, Multigraph and showcard types)

## II. Type Design

### A. Historic overview

- 1. Lettering development
- 2. Influence of invention of printing and imitation of copiests
- 3. Subsequent developmental history

### B. Mechanics of design

- 1. Materials (inks, pens, papers, instruments)
- 2. Guidelines (head- and side-bearings; Cap-, x- and base-lines; inclination guides)
- 3. Consistency and dimensions; usual proportions
- 4. Letter morphology (weight, width, height, boldness, inclination, style, decoration, serifs)
- 5. Necessary optical illusions (*O* over-rides the line; tricks played by reduction; periods are ellipses; diagonals should be lighter; the *t* must lean, weighted tops of lowercase curves, etc.)
- 6. Counters, crotches, sharp points, ink traps
- 7. Super-fussiness (drawing in large scale, things which can neither be seen nor cut as matrices)

### C. Aesthetics of type design

- 1. Influence of history and tradition
- 2. Changes in taste
- 3. Readability and legibility
- 4. Tests for soundness of design
- 5. Dissection and analysis of typical good models (Bembo, Consort, Palatino, Optima, Centaur, Caslon, Bodoni, Clarendon, Spectrum)
- 6. Hints on possible future directions (minor variations on a sans-serif theme; humanistic feel in contemporary mode; need to do lasting designs in metal, leaving faddish designs to film)



7. Areas of design
  - a. Roman Caps and lowercase (upright)
  - b. Small caps
  - c. Punctuation
  - d. Special signs, fractions (need to harmonize with the basic font)  
accents, reference marks, music, chess, crosswords, maps
  - e. Italics (kerns vs logotypes and ligatures)
  - f. Bold face (uniform increases in weight)
  - g. Scripts
  - h. Special faces (uncials, blackletter, foreign faces, swashes, non-alphabetic signs, Morse code, shorthand, phonetic, Braille)
  - i. Ornaments and borders
8. Differences in drawing for matrix engraving vs punch- or type-cutting
9. Pattern changes made for various sizes

### III. Patterns

#### A. General

1. Types of patterns, general discussion
2. Indexing
3. Counters

#### B. Patterns for engraved matrices

1. Right-reading, sunken patterns
2. Reduction ratios and stylii
3. Modification of pattern to produce desired result
4. Pattern-making methods (paper cut-outs, linoleum, Nylaprint, electroplates, soldered metal)
5. "Ears" for 90° outside corners

#### C. Patterns for hand-cut punches

1. Freehand with scribing needle, Fournier gauges, index squares
2. Photographic image transfer
3. Pantographic scribing

#### D. Patterns for machine-cut punches

1. Wrong-reading, raised patterns
2. Theory of pantographic punch-cutting
  - a. Cutter angles
  - b. Tracer sizes and proportions
  - c. Milling, roughing and finishing cutters
3. Pitfalls of engraved punches (round inside corners, etc.)

#### E. Patterns for type-cutting

1. Patterns similar to those for punch-cutting
2. Special problems (metal burring)



## IV. Matrix Engraving

### A. Pantographs

1. Major kinds (Benton [U.S. & Japan], Kämpf, Gorton, Preis)
2. Characteristics (accuracy, ratio range, reversing fixture, various models unsuited to typefounding)
3. Compatible cutter grinders

### B. Materials for blanks (free-machining brass; not copper; aluminum, magnesium, steel)

### C. Lubricants (oil for most; kerosene for aluminum)

### D. Matrix-holding jigs

### E. Grinding the cutter

1. Common 3- and 4-sided cutters
2. ATF screwdriver-type
3. Grinding procedures (smooth, not burned)
4. Inspection under graduated glass
5. Stoning relief side
6. Stoning for width
7. Need for exact width (% of line) and flatness (cut a . not a .)

### F. Positioning matrix blank with pattern, using index mark and prototype blank

### G. Positive Zero with roughing cutter

### H. Roughing cut (stylus force, broken cutters, counters, tracing techniques for counters and openings, use of straightedge, three-stage rough cutting)

### I. Re-zeroing with finishing cutter (shallow cut, polishing, visual inspection)

### J. Sealing-wax chip removal

### K. Final inspection, Tensor light, Micro-mike

### L. Justifying (by machine [Klingspor], with file, with a milling machine)

### M. Marking (point size, series number; width in points or Monotype wedge positions)

## V. Punchcutting

### A. Steel (kinds, quality, sources)

### B. Softening



C. Facing, truing, uniform lengths, proper lengths for hand-cutting compared to those for machine-cutting

D. Hand punch-cutting

1. Punch size relative to type size, indexing
2. Etching of whole punch or counters
3. Counters
  - a. Counterpunches and counter-counterpunches
  - b. Drilling or routing
  - c. Free vs. exact counters (Rudolf Koch discussion)
4. Serifs—thickness gauges, bracketing, ends, inside supports
5. Strokes, curves, inside corners, script joins
6. Decoration, shading, aparallel lines
7. Step-accents vs. grinding off later
8. Gravers (kinds, uses, sources)
9. Files (kinds, uses, sources)
10. Filing up to the face (Carl Dair papers, stoning the face)
11. Smoke proofs (techniques, advantages)
12. Hardening punches (oil/water; temperatur e/size/time)
13. Drawing back (temperature/size/time)
14. Storage of punches to minimize oxidation

E. Machine-cutting

1. Theory and mathematics of cutters (depth/tracers)
2. Punch-holding jigs for various pantographs
3. Correcting mistakes of cutting
4. Supportive counters, plateaus; depths, uses
5. Milling for fit and to correct drift
6. Indexing the punch
7. Putting on accents for grinding off later
8. Step accents not worth the trouble
9. Difficulties of cutting inside corners
10. Smoke proofs/printed proofs
11. Finishing operations compared with those for hand-cut punches

## VI. Typecutting

- A. Dissimilarity to punchcutting
- B. Metals (type-metal, lead, acid-resisting aluminum; problems with brass, copper, steel)
- C. Techniques (counters not smooth in hand-cutting; masters cannot be counter-punched)



- D. Pantograph problems
- E. Cut master types to .918" high for proofing
- F. Removing ink before plating (Dunker recipe)

## VII. Driving punches

- A. Jigs and fixtures (Koch, Nelson, Deberny, Rädisch, Middleton)
- B. Hammering and its dangers
- C. Positioning for drift of the punch
- D. Making allowance for displaced metal
- E. Materials (aluminum, soft copper, brass)
- F. Justifying driven matrices
  - 1. Smoothing displaced metal
  - 2. Swing gauge for testing depth of four corners of matrix
  - 3. Milling the front and paralleling the back
  - 4. Head and side bearings
  - 5. Chamfering edges and corners
  - 6. Indexing (dimensions, size, font number, kern)
  - 7. Milling, shaping, grinding, filing

## VIII. Electrodepositing matrices

- A. Theory of electrolysis
- B. Preparing the tank
  - 1. Distilled (not deionized) water
  - 2.  $\text{CuSO}_4$  vs  $\text{NiSO}_4$  vs  $\text{CuF}(\text{OH})_2$
  - 3. Size and placing of anodes
  - 4. Excess acidity
  - 5. Temperature and agitation
  - 6. Impurities (metals, dust, spiders)
  - 7. Addition of gallic acid to increase plating efficiency
- C. Power
  - 1. Voltage
  - 2. Amperage
  - 3. Importance of consistent current supply



#### D. Depositing cases

1. Plexiglas (Dunker)
2. Glass plates with high spaces
3. High spaces or cast cases (Soulé) and wax
4. Various resists

E. Time to deposit (function of temperature, movement, number of cases, power, thickness, granularity tolerance, distance between anode and cathode)

F. Parting media

G. Separating deposit from the type

H. Ni or Cr flashing

I. Machining and justifying

### IX. Varieties of matrices

A. Linotype and Intertype

B. Ludlow

C. Monotype

1. Composition (US and English)
2. Display (US and English)
3. Giant and Supercaster
4. Thompson

D. Foundry varieties

### X. Engraved type

A. Materials (brass, aluminum, lead and wood)

B. For very large sizes and for hot stamping

C. Japanese system of plates and factotum bodies

D. For special effects (Neuland)

### XI. Casting and Casting Machines

A. Monotype (Thompson, Type and Rule, Composition, Super Caster, Material Maker)

B. Other U.S. machines (Barth, Bruce, Nürnberger-Rettig-Universal)

C. European (Küstermann, Foucher, Nodis)



- D. Asian (Hakko, Rineisha, Koike)
- E. Handmolds
- F. Theories of casting
- G. Automation: hand, semi-, full with finishing
- H. Set-sizes in Monotype composition and display
- I. Special problems (linecasting matrices, cored quads, fine lines, exploding type, frosty faces, kerning)
- J. Metal (formulae, dross, eutectic points)
- K. Lubricants (Dunker formula)
- L. Cooling (distilled H<sub>2</sub>O with rust inhibitor)
- M. Foot plows, nicks
- N. Special molds (mortised,  $\Delta$ ,  $\perp$ )

## XII. Finishing

- A. Rubbing
- B. Inspecting
- C. Fonting and apportionment
- D. Packaging

## XIII. Special problems and solutions

- A. Logotypes (r. y, - . . , the 't ub at kerned o)
- B. Andrew Dunker Homespun, Ø solution by Rädisch
- C. Typo-timbrage
- D. Lord's Prayer on a single type
- E. Blackletter & script alignment, script joins, swashes
- F. Letterfitting (Headliners, Leach, Kindersley)
- G. Spanish alignment of ¿!?
- H. The final judge is the eye (wks trials)

## XIV. Type specimens

- A. Useful examples
- B. Latin text; no descenders in last line
- C. Numbering of specimens



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